

## Safety Risk Groups

### Examples

- **Risk Group 1**
  - *Bacillus subtilis*
    - Ubiquitous bacterium found in water, soil, air
    - Not considered pathogenic or toxigenic to humans, animals, or plants
  - *Escherichia coli* K-12
    - E. coli is normal inhabitant of colon of almost all mammals
    - K-12 is debilitated strain – does not normally colonize human intestine
    - History of safe commercial
- **Risk Group 2**
  - Measles virus
    - Pathogenicity: acute disease, fatality <0.5% - 25%
    - Host range: Humans
    - Transmission: primarily droplet spread
    - Vaccine available
  - Hepatitis B virus
    - Pathogenicity: asymptomatic and symptomatic infections, long-term fatality = 2-3%, 95% of adult infections self-limiting
    - Host range: Humans (chimpanzees are susceptible)
    - Vaccine available
- **Risk Group 3**
  - *Mycobacterium tuberculosis*
    - Proven hazard to laboratory workers (3x higher rate of infection)
    - Low aerosol infectious dose (ID<sub>50</sub> < 10 bacilli)
    - Host range: Primarily humans, cattle, primates, other animals (rodents)
  - St. Louis encephalitis virus
    - Pathogenicity: Fatality rate of 2-22%, 30-50% of severe cases have prolonged convalescence
    - Host range: Humans, wild birds, other mammals
    - Supportive care is only treatment
- **Risk Group 4**
  - Ebola virus
    - Pathogenicity: Sudden onset, 50 – 90 % fatality
    - Host range: Humans, monkeys, chimpanzees, domestic guinea pigs
    - BSL4 laboratory recommended even for clinical work (Public Health Agency of Canada)